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(21) Application No. 56748/72 (22) Filed 8 Dec. 1972

(44) Complete Specification published 18 April 1974

(51) International Classification B60G 9/00

(52) Index at acceptance  
B7D 2A2F 2A4A3

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## (54) MOTOR VEHICLE SUSPENSIONS

(71) We FORD MOTOR COMPANY LIMITED of 88 Regent Street, London W.1., a British Company, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to motor vehicles and in particular to motor vehicle suspensions.

According to the invention a motor vehicle has the following features:—

(a) an axle is located longitudinally of the vehicle by longitudinally extending arms;

(b) each arm comprises a spring steel leaf disposed in a substantially vertical plane;

(c) one end of each leaf is pivotally connected to the vehicle body structure and the leaf is fixed to the axle so that the twisting movement of the axle relative to the body structure about a longitudinal axis of the vehicle is accommodated by twisting of the leaf but rotation of the axle is resisted by the leaf; and

(d) suspension springs are mounted between the body structure and the arms at the end of the arms remote from their pivotal mounting to the vehicle body structure and the axle is fixed to the arms between the suspension springs and the pivotal mountings.

The suspension of the invention is particularly suitable for use in commercial motor vehicles having air suspension.

The invention will now be described with reference to the accompanying drawing, in which the single figure is a perspective of the rear suspension of a commercial motor vehicle.

The body structure of the motor vehicle is indicated in outline at 10. The suspension comprises a pair of parallel longitudinally extending suspension arms 11. Each suspension arm comprises a pair of spring

steel leaves 12 each disposed in a vertical plane. The forward end of each pair of leaves 12 are connected by a spacer 13 and pivotally mounted on the body structure 10 for movement about a transverse axis of the vehicle. It is not necessary for the pivotal mounting to accommodate twisting of the suspension arms.

The other end of each leaf 12 is fixed to a spacing member 14. Air suspension units act between the vehicle body structure 10 and the spacing member 14.

A driving axle 16 of the vehicle is fixed to the leaves 12 of the suspension arms 11 between their forward pivotal mountings and the spacing member 14. Spacers (not shown) are interposed between the leaves of each arm at a point where the axle is mounted to the leaves. A Panhard rod 17 is connected between the axle 16 and the vehicle body structure 10 for locating the axle 16 transversely of the vehicle.

In operation the leaves 12 accommodate twisting movement of the spacing member 14 and the axle 16 relative to the vehicle about a longitudinal axis and thus avoid the need for flexible mounting arrangements between the suspension arms and the body structure, the axle and the spacing member 14. The vertical mounting of the leaves 12 permits their torsional flexibility to accommodate such twisting movements, but the leaves are sufficiently rigid in a vertical direction to carry the suspension loads and to locate the axle longitudinally of the vehicle.

## WHAT WE CLAIM IS:—

1. A motor vehicle in which:—

(a) an axle is located longitudinally of the vehicle by a pair of longitudinally extending arms;

(b) each arm comprises a spring steel leaf disposed in a substantially vertical plane;

(c) one end of each leaf is pivotally con-

- 5 nected to the vehicle body structure and the leaf is fixed to the axle so that the twisting movement of the axle relative to the body structure about a longitudinal axis of the vehicle is accommodated by twisting of the leaf but rotation of the axle is resisted by the leaf; and
- 10 (d) suspension springs are mounted between the body structure and the arms at the ends of the arms remote from their pivotal mounting to the vehicle body structure and the axle is fixed to the arms between the suspension springs and the pivotal mountings.
- 15 2. A vehicle as claimed in claim 1 in which the arms are connected by a spacing member and the suspension springs are mounted on the spacing member.
- 20 3. A vehicle as claimed in claim 1 or claim 2 in which the suspension springs are air suspension units.
4. A vehicle as claimed in any one of the preceding claims in which each arm is formed by two parallel spaced apart leaves which are connected by spacers at the pivotal mountings and at the axle.
5. A vehicle as claimed in any one of the preceding claims in which the axle is a driving axle.
8. A vehicle as claimed in any one of the preceding claims in which the axle is located transversely of the vehicle by a Panhard rod.
9. A motor vehicle having a rear suspension substantially as hereinbefore described with reference to and as shown in the accompanying drawing.
- PETER ORTON,  
Chartered Patent Agent.

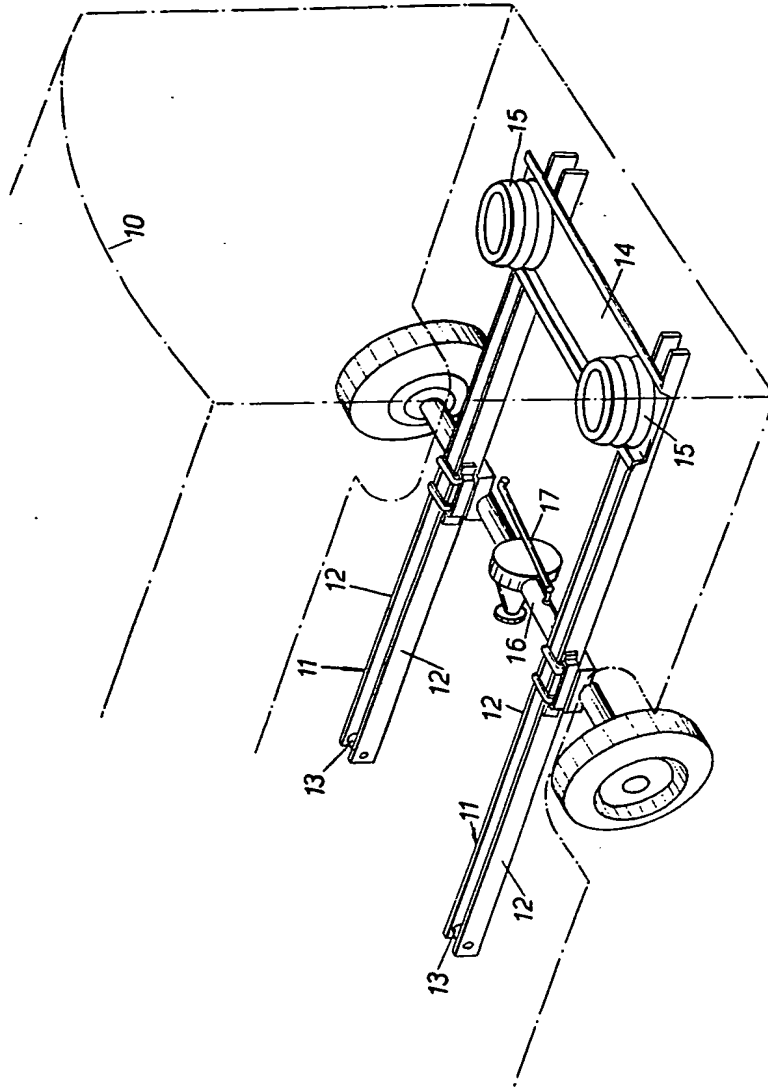
Printed for Her Majesty's Stationery Office by The Tweeddale Press Ltd., Berwick-upon-Tweed, 1974.  
Published at the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

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COMPLETE SPECIFICATION

1 SHEET

*This drawing is a reproduction of  
the Original on a reduced scale*



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